



Drinking Water Quality Management Plan

Annual Report 2020-21

November 2021



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EXECUTIVE SUMMARY

Water suppliers in Queensland (QLD) are required under the *Water Supply (Safety and Reliability) Act 2008* (the Act) to operate under an approved Drinking Water Quality Management Plan (DWQMP) to protect public health. In addition, the preparation of a DWQMP report per financial year is required by the Act.

This DWQMP report documents the performance of Carpentaria Shire Council (Council) in implementing the DWQMP for the 2020-21 financial year.

Council is a registered service provider that manages the Normanton-Karumba drinking water supply scheme under an approved DWQMP. The water supply scheme is comprised of raw water sources (weir and bore), a water treatment plant, pump stations, service reservoirs and distribution network.

Council has undertaken effective risk management and water quality testing to ensure the supply of safe drinking water.

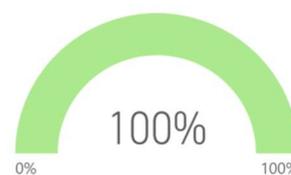
Various improvement actions have been undertaken and/or planned as continual improvement. The improvement actions have been identified through detailed risk assessment to ensure safe quality of drinking water.

The water quality verification results and assessment showed that Council supplied safe quality water to the customers, with 100% compliance against the Australian Drinking Water Guidelines for the parameters tested.

Compliance E.coli Normanton (ND)



Compliance THMs Normanton (<250ug/L)



Compliance E.coli Karumba (ND)



Compliance THMs Karumba (<250ug/L)



No events or incidents were recorded in this reporting period. The absence of water quality related customer complaints indicated good customer satisfaction.

No review of the DWQMP was undertaken during the reporting period. A regular review was undertaken in November 2021, outside the reporting period. Minor changes to the treatment processes and monitoring programs were identified in the review and will be captured in the next Annual Report. A regulatory audit was conducted in September 2021 (outside this reporting period) and findings will be included in the next Annual Report.

1. INTRODUCTION

This is the Drinking Water Quality Management Plan (DWQMP) Annual Report for Carpentaria Shire Council (Council) for the financial year 2020-21.

The DWQMP has been established and is being adhered to in order to protect public health through the identification and minimisation of public health related risks associated with drinking water. Council is operating under an approved DWQMP, with the approval granted by the Department of Regional Development, Manufacturing and Water (DRDMW).

This Annual Report summarises Council's drinking water quality performance for the reporting period and progress on the implementation of the improvement plan. The report is made available to customers on Council's website and for inspection upon request at the Council office.

1.1. Scope

The report has been prepared to fulfil the legislative DWQMP reporting requirements set out in the *Water Supply (Safety and Reliability) Act 2008* (the Act).

1.2. Purpose

This annual report aims to:

- be a reference document for the Regulator, as well as customers, on Council's performance in relation to the DWQMP reporting obligations under the Act, for the reporting period
- provide a summary of Council's performance in implementing the DWQMP.

2. SCHEME OPERATED

With the introduction of the Act, water service providers are required to register as a drinking water service provider for the delivery of a drinking water service. Council is a registered drinking water service provider, with the service provider identification (SPID) number as 32.

Council manages the Normanton-Karumba drinking water supply scheme and distributes treated water to the communities of Normanton and Karumba respectively. The water supply scheme is comprised of raw water sources (weir and bore), a water treatment plant, pump stations, service reservoirs and distribution network.

3. DWQMP IMPLEMENTATION

The implementation of the DWQMP is discussed in this section, and also captured in the other sections that follow.

3.1. Risk management

The process of keeping drinking water safe is one of risk management. Through efficient operations and implementation of the DWQMP, Council has ensured effective risk management to assure safe quality of drinking water to our customers.

During the reporting period, Council supplied drinking water that complied with the water quality criteria set in the Australian Drinking Water Guidelines (ADWG). There was no major incident or event that comprised Council's ability to supply safe quality drinking water to customers.

3.2. Monitoring

Council maintains comprehensive monitoring programs to ensure that the quality of water supplied to customers is safe. The monitoring programs assist to identify any issue before it becomes a significant water quality incident. The results from the verification monitoring for the reporting period are discussed in Section 4.

Council also undertakes operational monitoring, which includes the planned sequence of measurements and observations to assess and confirm the performance of our preventive or control measures. Measurements are of operational parameters that indicate whether processes are functioning effectively.

Quality assurance is important to guarantee consistently reliable and legally defensible results and ensure customers are provided with the best quality water.

Council has the following quality management systems in place:

- microbiology samples were sent to the Cairns Regional Council Water Laboratory, which is a NATA accredited laboratory, during the reporting period
- operations staff have been appropriately trained to undertake sampling

3.3. Implementation of Risk Management Improvement Plan

Council maintains a culture of continuous improvement and are implementing the Improvement Plan of the DWQMP and making progress towards strengthening the management of the water supply. During the reporting period, Council implemented a number of key actions including:

- Investigation to reduce trihalomethanes (THMs) formation was completed.
- Installed an online turbidity meter at Glenore weir.
- Completed in-house *E. coli* testing as an operator training exercise at Normanton and Karumba.
- Implemented locking of reservoir hatches and improved the vermin-proofing of Karumba reservoirs.

Detailed status on the Improvement Plan implementation is presented in Appendix A.

4. VERIFICATION MONITORING

This section discusses the compliance with the water quality criteria. Council supplied safe quality drinking water to its customers during the reporting period as discussed in the following table.

A summary of the samples tested is included in Table 1. All parameters were compliant as per the ADWG.

Table 1 Drinking water quality performance –verification monitoring

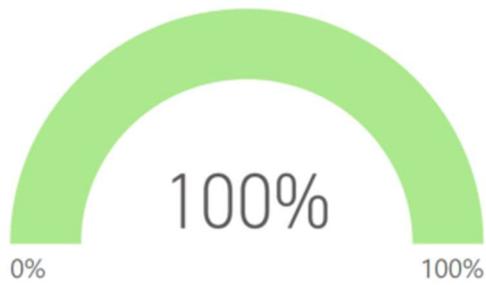
Location	Parameter	Min no. of samples to be collected	No. of samples actually tested	Water quality criteria (spec)	No. of non-compliant samples	Comments
Normanton	Total coliforms (CFU/100mL)	52	63	NA	NA	✓ Low, system is flushed as possible.
	<i>E. coli</i> (CFU/100mL)	52	63	Not detected (ND)	0	✓ Compliant.
	Free Chlorine (mg/L) - Reticulation	52	77	NA	NA	✓ Free chlorine is maintained in the network.
	Free Chlorine (mg/L) - WTP	365	365	NA	NA	✓ Adequate free chlorine leaves the WTP.
	Trihalomethanes (THMs) (mg/L)	2	2	0.25	0	✓ Compliant.
Karumba	Total coliforms (CFU/100mL)	12	10	NA	NA	✓ Low, system is flushed as possible.
	<i>E. coli</i> (CFU/100mL)	12	10	Not detected (ND)	0	✓ Compliant.
	Free Chlorine (mg/L) – Reticulation	12	366	NA	NA	✓ Free chlorine is maintained in the network.
	Trihalomethanes (THMs) (mg/L)	2	2	0.25	0	✓ Compliant.

Variations:

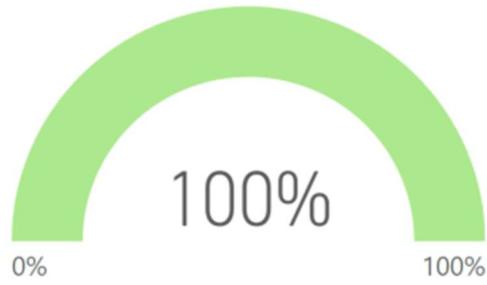
- There were more samples tested in Normanton reticulation for total coliforms, *E. coli* and chlorine than the minimum (1 sample/week). This was because at times Council undertakes multiple samples to ensure more coverage of the reticulation, which is best practice. The external weekly microbiological data for Normanton for the weeks starting 28 Dec 2020, 18 Jan 2021 and 1 Feb 2021 were not available. However, the testing was undertaken in-house, which has been included in the sample count.
- There was no monthly *E. coli* or total coliforms data available for Karumba for November 2020 due to no sample container being available, and February 2021 due to floods. From October 2021 (outside reporting period), the *E. coli* testing is undertaken in-house to overcome these sorts of issues.
- Free chlorine is measured in-house daily in Karumba (spread across the sites). Free chlorine is measured daily in the final treated water at WTP in Normanton and also tested regularly across the reticulation sites.

The level of compliance for the verification monitoring data (relevant ADWG health-based values) is also displayed visually in *Figure 1*.

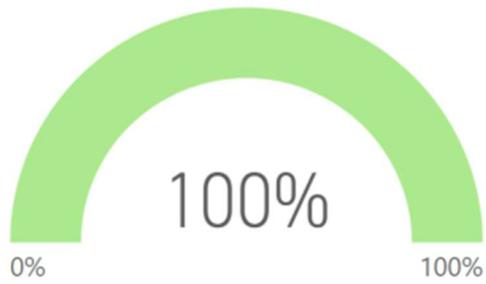
Compliance E.coli Normanton (ND)



Compliance THMs Normanton (<250ug/L)



Compliance E.coli Karumba (ND)



Compliance THMs Karumba (<250ug/L)

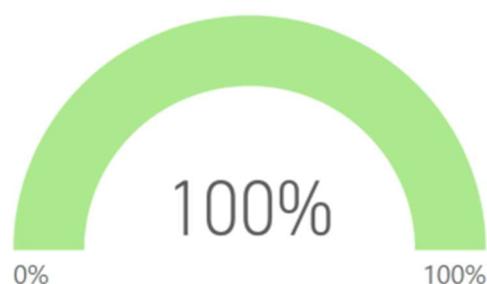


Figure 1 Verification Compliance

5. INCIDENTS REPORTED TO THE REGULATOR

There were no Events¹ or Incidents² to report for 2020-21 period. Water quality risks were proactively managed.

6. CUSTOMER COMPLAINTS

There were no formal water quality related customer complaints recorded for 2020-21 period.

7. DWQMP REVIEW OUTCOMES

No review of the DWQMP was undertaken during the reporting period.

A regular DWQMP review was undertaken in November 2021, outside the reporting period. Minor changes to the treatment processes and monitoring programs were identified and will be captured in the next Annual Report.

8. DWQMP AUDIT FINDINGS

No regulatory audit was required to be conducted during the reporting period.

The regular audit was undertaken in September 2021 and will be reported in the next Annual Report.

¹ Potential to impact water quality

² Non-compliance against ADWG value

9. GLOSSARY

ADWG	Australian Drinking Water Guidelines (2011). Published by the National Health and Medical Research Council of Australia
DRDMW	Department of Regional Development, Manufacturing and Water
DWQMP	Drinking Water Quality Management Plan
<i>E. coli</i>	<i>Escherichia coli</i> , a bacterium which is considered to indicate the presence of faecal contamination and therefore potential health risk
THMs	Trihalomethanes, a group of disinfection by-products that become a potential health risk in elevated concentrations.
Event	Means anything that has happened to the service that has escalated beyond the ability to control and there is concern that public health may be adversely impacted as a result.
Incident	Means a non-compliance with water quality criteria (e.g. exceeding an ADWG health guideline value).
Total coliforms	Group of bacteria whose presence in drinking water can be used as an indicator for operational monitoring.
mg/L	Milligrams per litre
CFU/100mL	Colony forming units per 100 millilitres

DOCUMENT HISTORY AND TRACKING

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A. IMPROVEMENT PLAN PROGRESS

The improvement actions relevant for this reporting period are included in the Table below with relevant commentary on implementation status.

Ref	Component	Improvement Actions	Timeframe	Status	Comments
WQ1	Whole of System	Investigate arrangement with relevant suppliers (Veolia and Endress Hauser) for maintenance and calibration visits every 2 years.	NA	Completed	Replaced units, came with calibration verification kit
WQ2	Normanton-Karumba scheme	Investigate source water protection (e.g. fencing off to keep stock away) as part of the Glenore weir upgrade project.	NA	Completed	Weir was upgrade done, however, it is not possible, to undertake any fencing. The river is too long to have any real impact due to fencing off.
WQ3	Normanton-Karumba scheme	Modify water quality data spreadsheet to capture measurement for clarified water, filtered water and chlorine analyser from the respective online meter readings at least daily when grab samples are tested, and when there is a CCP breach. Include CCP targets and critical levels in the spreadsheet - colour code for breaches.	NA	Completed	Done. SWIM Local
WQ4	Normanton-Karumba scheme	Investigate improving filter performance (e.g. changing or upgrading filter media, air scour). Review filtered water turbidity targets following upgrade (turbidity off filters <0.2 NTU or combined filters <0.5 NTU).	NA	Completed	Investigated and fixed.
WQ5	Normanton-Karumba scheme	Karumba reservoirs - secure overflow pipes to ensure no access point for pests and vermins	NA	Completed	Done
WQ6	Normanton-Karumba scheme	Investigate options to reduce THMs, e.g. re-configuration of Karumba reservoir pipeworks and optimising amount of re-chlorination. Consider relocating the rechlorination point.	NA	Completed	Investigation complete. Reservoir has been re-configured and relocating the re-chlorination point is underway (pipework done), refer to action #44.
WQ7	Whole of System	Investigate raising weir storage capacity with the Glenore Weir upgrade project.	NA	Completed	Done.
WQ8	Whole of System	Compile operating procedures for the service into a Manual, including reservoir cleaning (with schedule), jar tests, filter backwash, mains repairs, hygiene (tools, personnel), sampling, equipment calibration, flushing. This includes development of relevant checklist to record preventive measures undertaken.	NA	Completed	This was delayed due to staff movement, but will be considered. Timeframe changed to reflect this.
WQ9	Whole of System	Undertake staff training on CCPs and implementation. CCPs to be signed off by the MENG and operators. Ensure online meters are set on the correct alert and critical limit values for sending alarms and shut downs.	NA	Completed	SCADA alarms set. Training to be provided, new action item included, WQ11.
WQ10	Whole of System	Undertake the first suite of chemical/physical testing of each source water as per the Monitoring Plan 2015, section 5.	NA	Completed	This was delayed due to staff movement, however, has been completed now in Sep 17.
WQ11	Whole of System	Develop a DWQMP implementation training package, including CCPs and deliver to relevant water staff, including operators.	NA	Completed	Induction package
WQ12	Whole of System	Implement a document transfer process from the Manager to the operators, including operators required to sign off on current DWQMP documents after receiving/reading them	NA	Completed	Induction package

Ref	Component	Improvement Actions	Timeframe	Status	Comments
WQ13	Whole of System	Consider adding structure to the InfoXpert system so documents and records can be stored in folder making them easier to find.	NA	Completed	On SCADA PC, accessible via teamviewer
WQ14	Normanton-Karumba scheme	Improve vermin-proofing of reservoirs.	NA	Completed	Done, further improvements identified, refer to #41.
WQ15	Normanton-Karumba scheme	Implement locking of reservoir hatches.	NA	Completed	
WQ16	Normanton WTP	Rectify stormwater diversion on the 1.46ML reservoir.	NA	Completed	Investigation and found that diversion pipe ran to overflow pipe and then to drain, no risk
WQ17	Normanton WTP	Aerate the ground water reservoirs.	NA	Completed	Investigated, too expensive, other measures undertaken to reduce THMs risk
WQ18	Whole of System	Investigate baseline PFAS, PFOS and PFHxS testing utilising a trained sampler. Discuss with QH. Undertake baseline testing for radiological parameters - gross alpha and gross beta. Include testing of Boron in the annual testing suite.	Jun-22	To Start	Discussion was done with QH on PFAS testing, to be progressed again.
WQ19	Raw Water	Install an online turbidity meter at the Glenore Weir.	NA	Completed	Done
WQ20	Whole of System	Investigate installing an online free chlorine instrument near Normanton Sports Ground.	Jun-23	In progress	Investigation completed. But left as in progress. Building to house it in is to be constructed.
WQ21	Normanton WTP	Install a shade structure for the hypochlorite product tank.	NA	Completed	Done
WQ22	Whole of System	Install "DO NOT DRINK" and "DANGER ELEVATED FLUORIDE LEVELS" warnings at bore sites.	NA	Completed	Sign - Do not drink - non-potable water
WQ23	Normanton WTP	Implement interlock of the filtration system with an exceedance of the operational limit for settled water	Dec-22	To Start	To be investigated
WQ24	Whole of System	Improve focus on backflow prevention measures by enabling water and waste staff to undertake and monitor the backflow prevention device testing program.	NA	Completed	Marked as completed. This role is with the Plumbing Inspector, not enough capacity for operators to take this on board.
WQ25	Normanton WTP	Print CCP procedures and display in the control room of the plant.	NA	Completed	Done
WQ26	Normanton WTP	Consider consolidating water quality records into three files (Normanton WTP, Normanton Reticulation, Karumba Reticulation).	NA	Completed	Done
WQ27	Whole of System	Commence in-house E. coli testing as an operator training exercise at Normanton and Karumba. Consider amending verification monitoring plan once training is completed.	NA	Completed	Done
WQ28	Whole of System	Undertake a baseline study of chlorate to determine typical levels using hypochlorite generator.	Dec-21	To Start	Planned to be done
WQ29	Normanton WTP	OMM for hypochlorite generator.	NA	Completed	In place